4CHANNEL SURROUND STEREO

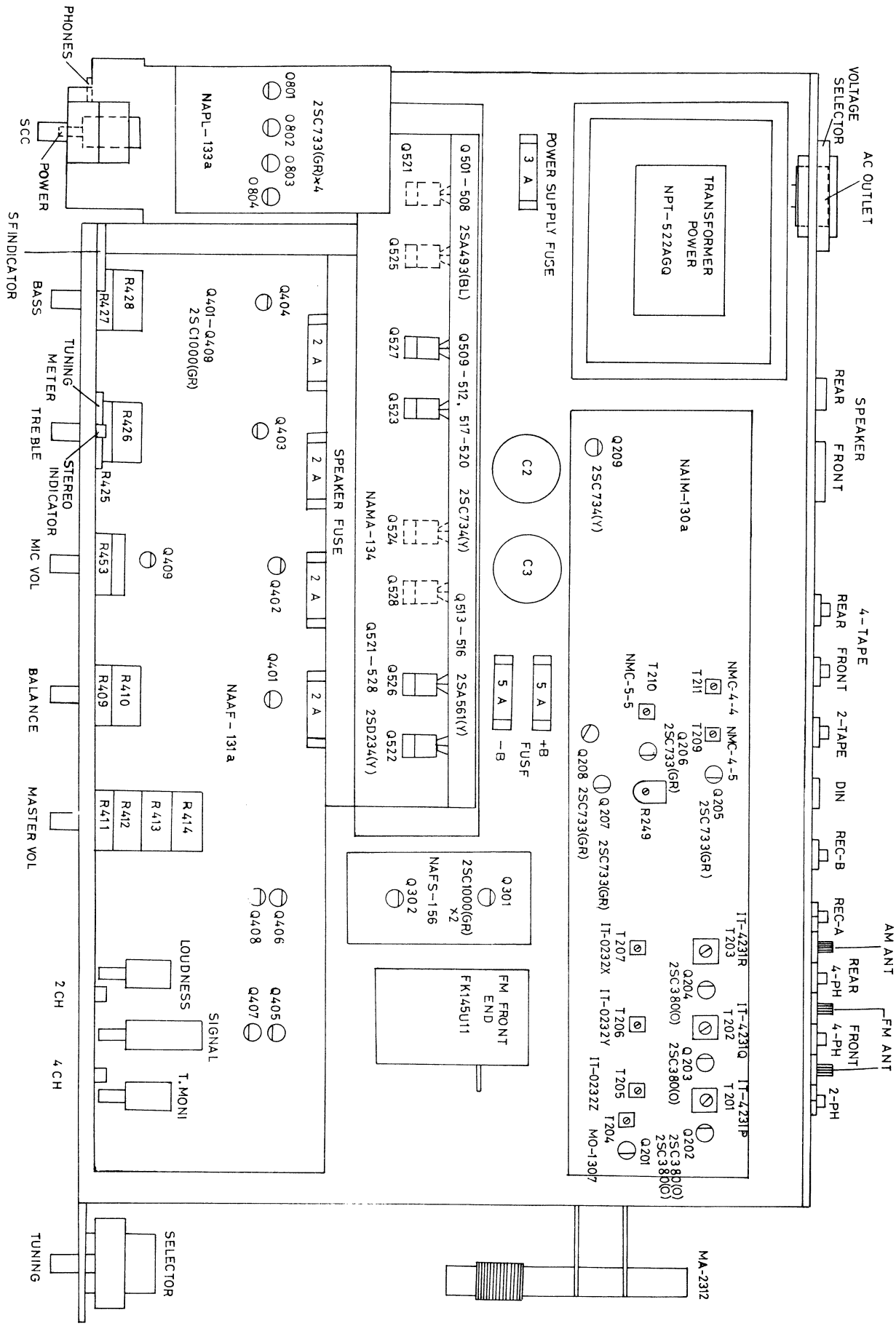
SERVICE DATA

MODEL-Y-3A

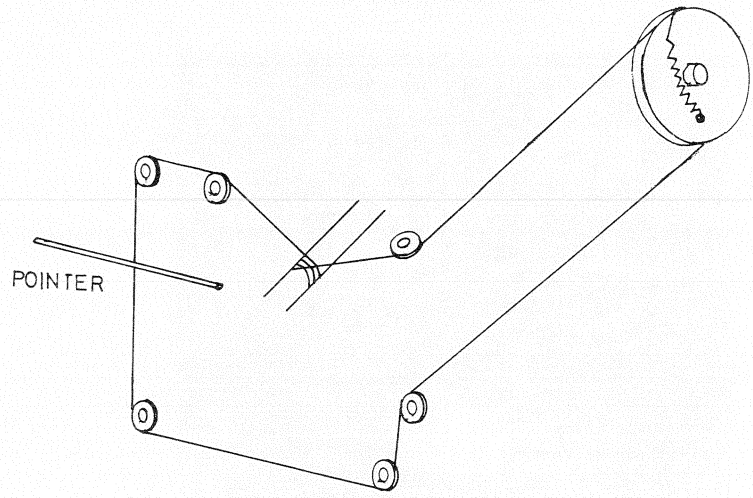
SPECIFICATIONS

Type:	All Silicon Transistor 4-channel Stereo Receiver with 4-channel Surround Composer.
Circuit:	Direct Coupling and Differential Amplifier. Quasi Complementary SEPP System.
Semiconductors:	Transistor 52 (1 FET), Diode 37
≪Tuner Section≫	
Tuning Range:	FM 88-108 MHz, AM 530-1,605 kHz
Sensitivity:	FM 2.0μV(S/N 30 dB), AM 12 μV(S/N 20 dB)
Signal to Noise Ratio:	FM better than 50 dB
Stereo Separation:	FM ST better than 35 dB
≪Audio Section≫	
Continuous Power:	48 W (12 W×4)
Dynamic Power:	80 W (20 W×4)
Total Harmonic Distortion:	less than 0.2%
Frequency Response:	30~30,000Hz($+0_{-3}$ dB)
Input Terminals:	PHONO-A : Discrete 4-chnnel Record Playing PHONO-B , Matrix 4-channel Record Playing.
	Stereo & Monaural Record Playing DIN (PB) : Stereo Tape Playing TAPE PB-B: Stereo Tape Playing TAPE PB-A: Discrete 4-channel Tape Playing
Output Terminals:	TAPE REC-A: Microphone-Mixing or Controlled Sound Stereo Tape Recording TAPE REC-B: Ordinary Stereo Tape Recording DIN (REC): Ordinary Stereo Tape Recording SPEAKERS: FRONT(L.R), REAR(L.R) PHONES : for Stereo Headphone
≪Other Circuits≫	
Bass Control, Treble Control, Loudness Control, Balance Control, SCC (Surround Composite Signal Control). FM mono-stereo automatically changed. FM stereo indicator, Tuning Meter, SF indicator (Surround Field Indicator)	
≪Power etc.≫	
Power Supply:	110, 120, 220, 240V 50/60 Hz
Dimensions:	510W×135H×337D mm
Weight:	11kg

PARTS LAYOUT

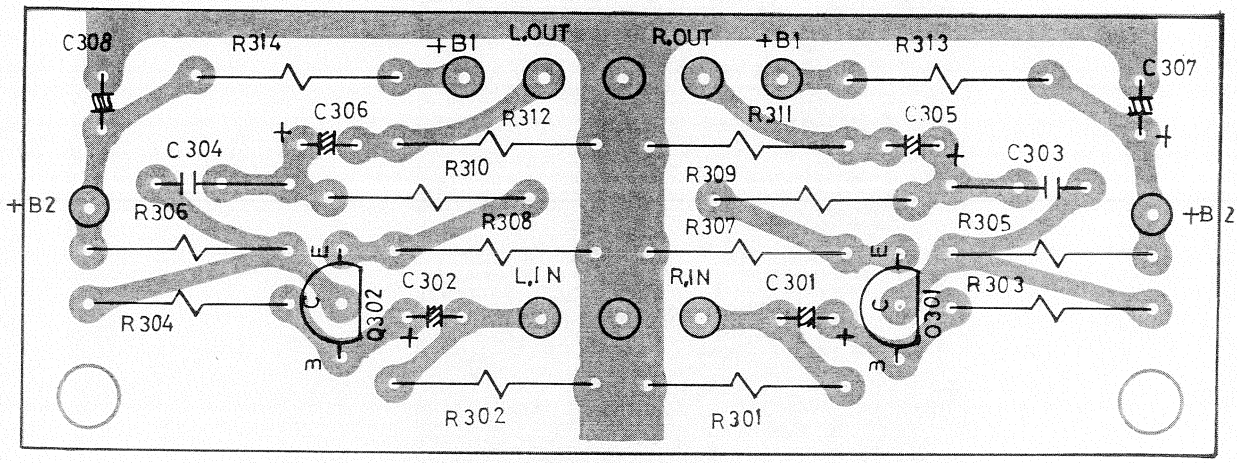


DIAL STRINGING

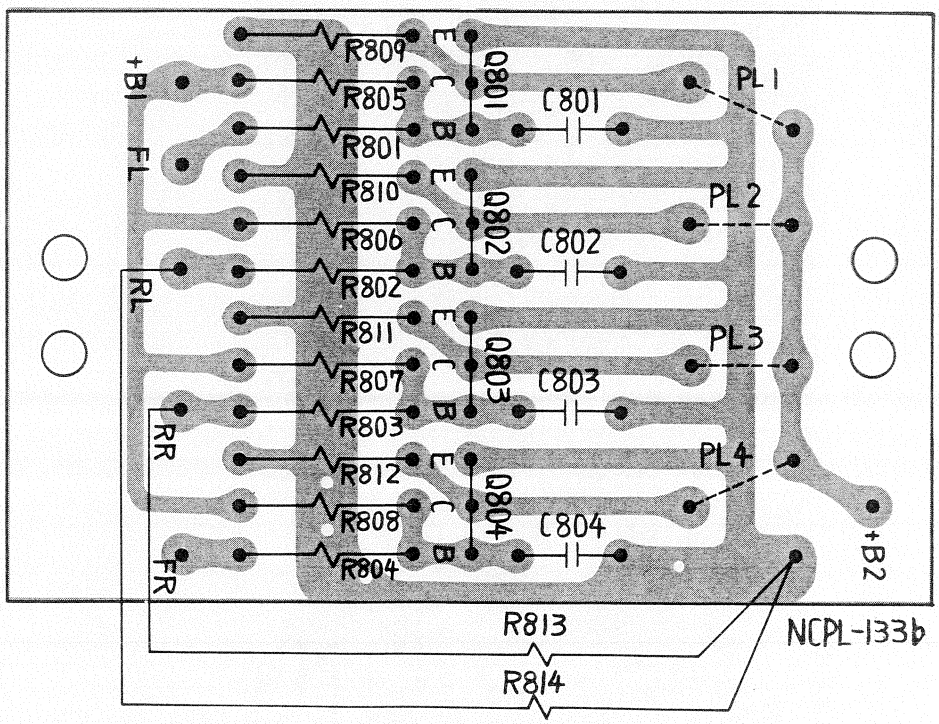


NCPL-133b

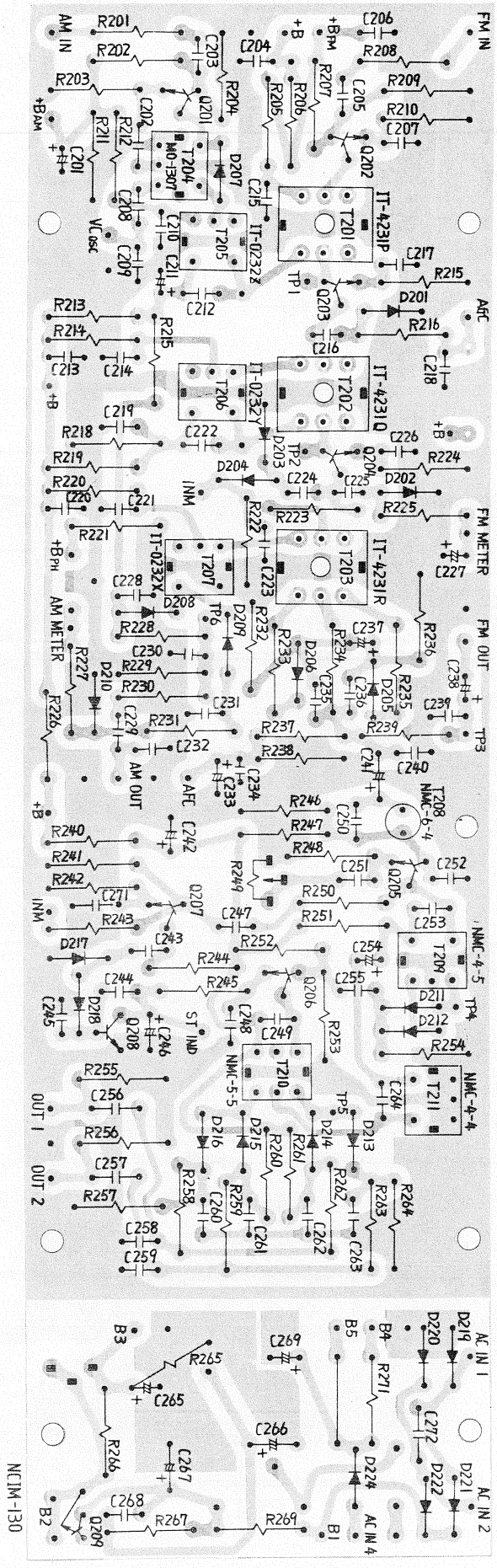
NAFS-156



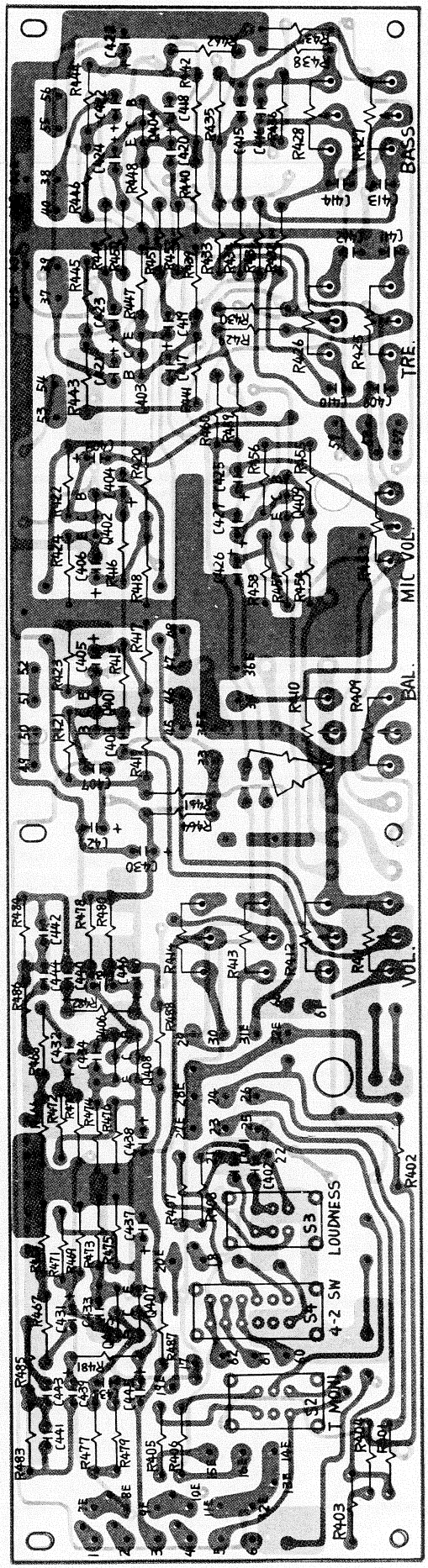
NCPL-133b



NCIM-130C

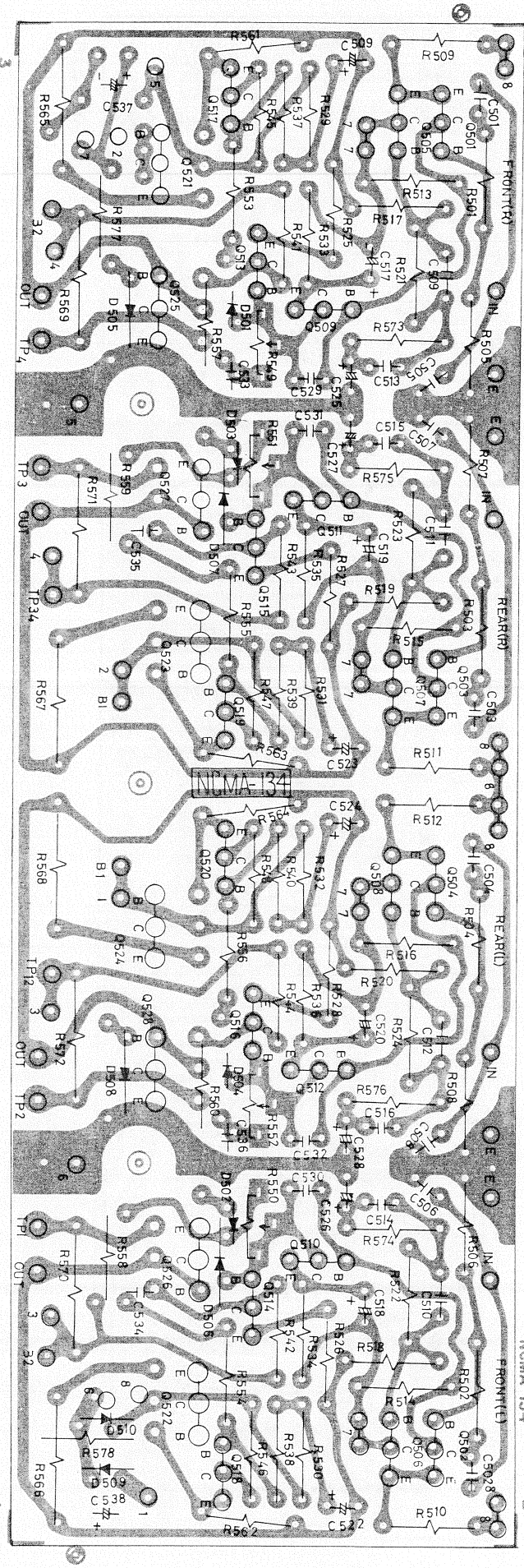

AM IN
FM IN
AFC
FM METER
FM OUT
AM METER
AM OUT
AFC
ST IND
OUT 1
OUT 2
AC IN 1
AC IN 2
AC IN 3
AC IN 4
NCIM-130

NAAF-131b



NCAF-131b

NCMA-134b


NCMA-134
FRONT(R)
REAR(R)
REAR(L)
FRONT(L)
IN
OUT
TP1
TP2
TP3
TP4
TP34
NCMA-134 B
×-3 NCMA-134
RG-20643
T.YAMADA

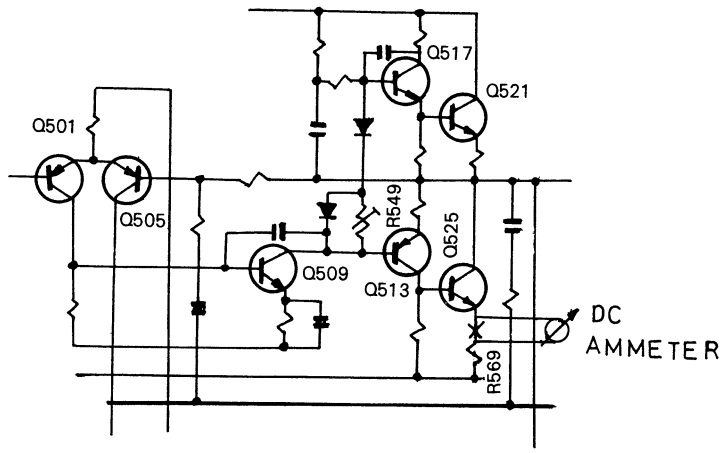
AUDIO

ADJUSTMENT OF IDLING CURRENT

Instrument required: DC Ammeter 50mA or 100mA.

When replacing POWER or DRIVER transistor, check the idling current of POWER transistor.

To adjust to normal value(20+5mA, −0mA), follow as drawing.



1. Cut the connection between Q525s emitter and resistor, and connect DC Ammeter.
2. Adjust the current to 20+5,−0mA by R549
3. After adjust, connect orijnal wiring.

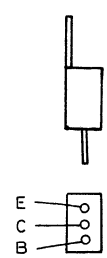
TRANSISTOR AND DIODE

Q201 − 209
Q509 − 520
Q401 Q407
Q402 Q408
Q405 Q409
Q406

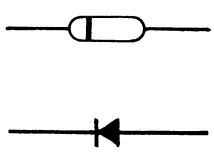
Q501 Q507
Q502 Q508
Q503
Q504
Q505
Q506

Q801
Q802
Q803
Q804

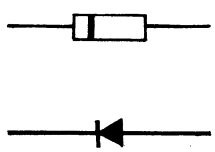
Q501 Q505
Q502 Q506
Q503 Q507
Q504 Q508



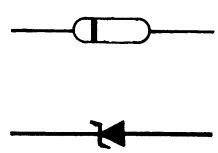
D201 − 218



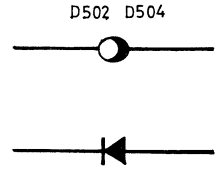
D219−224
D509



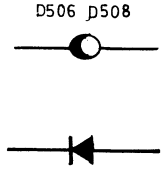
D510



D501 D503
D502 D504



D505 D507
D506 D508



ALIGNMENT PROCEDURE

INSTRUMENTS REQUIRED

1. AM and FM Signal Generator
2. AM and FM Sweep Generator
3. Vacuum Tube Voltmeter(VTVM)
4. Distortion-meter
5. Stereo-Modulator

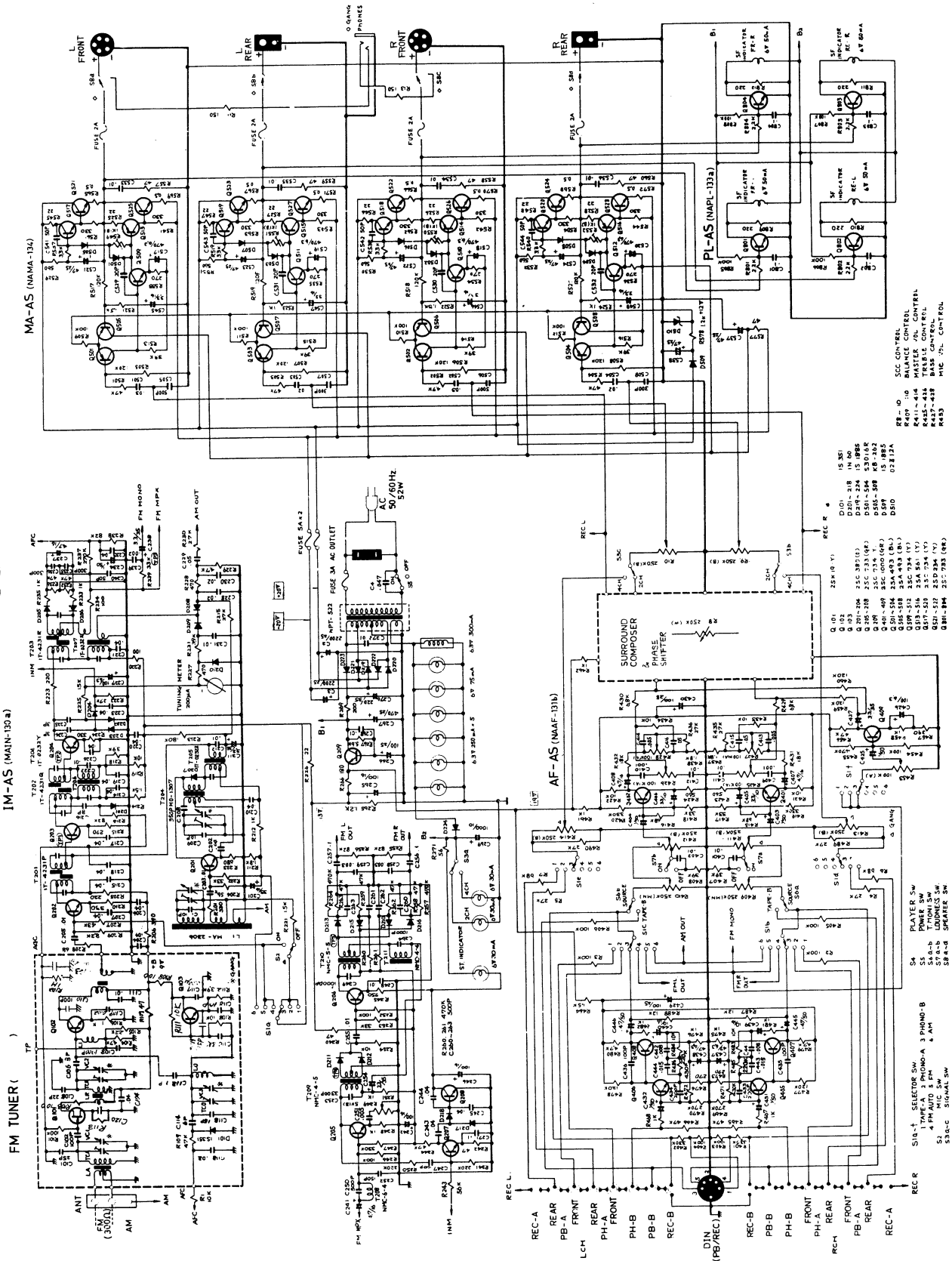
GENERAL ALIGMENT CONDITIONS

1. Signal input should be kept low as possible.
2. Standard modulation is 400Hz 30%.
3. Standard output is 500mW(2.0V 8ohm).

STEP	CONNECT SIGNAL SOURCE TO-	SET SIGNAL TO-	CONNECT OUTPUT INDICATOR TO-	SET RADIO DIAL TO-	ADJUST	ADJUST FOR-	REMARKS	STEP
1	Set Radio Selector for "AM".		Set Volume Control for "Minimum".					1
2	AM Sweep Generator to- AM Ant.	455KHz (Unmodulated)	Oscilloscope to- across TP-205	Quiet Point on band	IT-0232X IT-0232Y IT-0232Z	Maximum Symmetrical responce	Repeat to adjust as necessary	2
3	AM Signal Generator to- AM Ant. through a standard Radiating loop	515KHz (Modulated)	〃	Lower end	MO-1307	Maximum	Repeat 3 through 4 as necessary to obtain Maximum Sensitivity on station Repeat 5 through 6 as necessary	3
4		1680KHz (Modulated)	〃	Upper end		Maximum		4
5		600KHz (Modulated)	〃	Tuned to Signal		Maximum		5
6		1400KHz (〃)	〃			Maximum		6
7	Set Radio Selector for "FM".		Set Volum Control for "Minimum".					7
8	FM Sweep Generator to- Term "TP" on FM Tuner through a 50pF Capacitor Earth Side- RF Earth Point	±0.5MHz Sweep Centered at 10.7MHz	Oscilloscope to- across TP-203	Quiet Point on band	IT-4231P IT-4231Q Top & Bottom	Maximum Symmetrical "V" Curve response Centered at 10.7MHz	Detune NIT-3501R Bottom core Clockwise fully. Repeat to adjust as necessary	8
9		〃			IFT-1 IFT-2			9
10	〃	〃 (Set Signal over limiting)	〃	〃	IT-4231R Top	〃	〃	10
11	〃	±0.5MHz Sweep Centered at 10.7MHz	Oscilloscope to- across TP-204	〃	IT-4231R Top Bottom	Maximum Symmetrical "S" Curve response Centered at 10.7MHz		11
12	FM Signal Generator to- across FM Ant. Terminal through a matching network	87.0MHz (Modulated)	VTVM to- across TP-204	Lower end		Maximum	Repeat 12 through 13 as necessary	12
13		109.0MHz (〃)		Upper end		Maximum		13
14		90.0MHz (〃)	〃	Tuned to Signal		Maximum	Repeat 14 through 15 as necessary	14
15		106.0MHz (〃)	〃	〃		Maximum		15
16	Set Radio Selector for "FM AUTO".		Set Volum Control for "Minimum".					16
17	〃	98.0MHz (Pilot Signal 19KHz 10%)	VTVM to- across TP-503	Tuned to Signal	NMC-4-5	Maximum		17
18			VTVM to- across TP-504	〃	NMC-5-5	Maximum		18
19	〃	98.0MHz (Pilot Signal 19KHz 10% Main & Sub Sig. 1KHz 30% Conposit) (L ch only)	VTVM to- across TP-505	〃	NMC-4-4	Minimum	Repeat 19 through 20 to obtain balanced Maximum Separation as necessary	19
20	〃	〃 (R ch only)	VTVM to- across TP-506	〃	〃	Minimum		20

SCHEMATIC DIAGRAM

Y-3a



PARTS LIST

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
	***ASSEMBLIES**		
001	FM Front End	FK 145U 11	1
002	IFAmp. & MPX ass'y	NAIM-130c	1
003	Pre Amp. ass'y	NAAF-131b	1
004	Main Amp. ass'y	NAMA-134	1
005	SFI Amp. ass'y	NAPL-133a	1
006	Phase Shifter ass'y	NAFS-156	1
	LAMPS		
101	Pilot Lamp	6.0V 0.03A	3
102	Pilot Lamp	6.0V 0.05A-1	4
103	Pilot Lamp	6.3V 0.3A	1
104	Pilot Lamp	6.3V 0.25A	5
	TRANSFORMER, COIL		
201	Transformer-Power	NPT-522AGQ	1
202	Coil-Antenna	MA-2312	1
	CAPACITORS		
301	Electrolytic	EC 25V 2200μF	2
302	Mica	MI 500V 10μμF(K)	1
305	Plastic	DT 600V 0.047μF(M)	2
	RESISTORS		
401	Variable	N24RG100KB20	1
	SWITCHES & TERMINALS & ETC		
601	Switch-Rotary	NRS-366-20S-N	1
602	Switch-Push	NPS-112LN	1
603	Jack-Stereo Head Phone	HJ-628SQ-HI	1
604	Socket-Pilot Lamp	PLS-G1	5
605	Socket-2P	2P-S2-H	2
607	Socket-5P	5P-S1-H	1
608	2P Plug	2P-PLG-H1	2
609	5P Plug	5P-PLG-H1	2
610	Terminal	NTM-3PUN5	1
611	Terminal	NTM-16PD	1
612	Tuning Indicator	NIND-0200S9	1
616	Fuse	2A-T	4
617	Fuse	3A-T	1
618	Fuse	5A-T	2
619	Fuse Holder	FF-1S-H	4
	CHASSIS, SCREWS & NUTS		
707	Angle-Rear		1
716	Drum Ass'y		1
717	Dial Pointer Ass'y		1
719	Tuning Shaft ass'y		1
723	Front Panel		1
724	Dial Plate		1
725	Front Transparent Plate		1
726	Facet-RED		1
727	Facet-GREEN		1
	CABINET		
801	Amp. Box ass'y		1
804	Knob ass'y(SELECTOR, VOLUME)		7
805	Knob ass'y-Tuning		1
806	Knob-Push Switch		3
807	Knob-Power		1

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
808	Frame-SF Indicator		1
809	Clear Plate-SF Indicator		1
810	Coloured Plate-SF Indicator		1
826	Washer	W5×12F	4
828	Screw-Case	4×20F-N	4
	NAIM-130C		
	SEMICONDUCTORS		
002-101	Transistor	2SC829(B)	4
102	Transistor	2SC828(R)	4
103	Transistor	2SC734(Y)	1
104	Germanium Diode	1N60NFM	18
105	Silicon Diode	1S1885	6
	TRANSFORMERS & COIL		
002-201	Transformer-FM IF	IT-4231P	1
202	Transformer-FM IF	IT-4231Q	1
203	Transformer-FM IF	IT-4231R	1
204	Transformer-AM IF	IT-0232X	1
205	Transformer-AM IF	IT-0232Y	1
206	Transformer-AM IF	IT-0232Z	1
207	Coil-OSC	MO-1307	1
208	Coil-MPX	NMC-4-4	1
209	Coil-MPX	NMC-4-5	1
210	Coil-MPX	NMC-5-5	1
002-211	Coil-MPX	NMC-6-4	1
	CAPACITORS		
002-301	Capacitor-Electrolytic	EC 6.3V 100μF	1
302	Capacitor-Electrolytic	EC 10V 1000μF	1
305	Capacitor-Electrolytic	EC 16V 100μF	3
306	Capacitor-Electrolytic	EC 25V 100μF	1
307	Capacitor-Electrolytic	EC 25V 470μF	1
309	Capacitor-Electrolytic	EC 35V 220μF	1
	RESISTORS		
002-401	Resistor-Semi Variable	R-HK 5KB 3L	1
402	Resistor-Oxide Film	RN 2L 200	1
	NAAF-131b		
	TRANSISTER		
003-101	Transister	2SC458LG(D)	9
	CAPACITORS		
003-301	Capacitor-Electrolytic	EC 25V 100μF	3
302	Capacitor-Electrolytic	EC 6.3V 100μF	1
	RESISTOR		
003-401	Resistor-Variable	N24RQP250KBT20	1
402	Resistor-Variable	N24RGP250KBH20	1
403	Resistor-Variable	N24RGP100KA20	2
404	Resistor-Variable	N24RSP100KA20	1
	SWITCH		
003-601	Push Switch	NPS-342LN	1
	NAMA-134		
	SEMICONDUCTORS		
004-101	Transistor	2SD234(Y)	8
102	Transistor	2SC734(Y)	8
103	Transistor	2SA561(Y)	4
104	Transistor	2SA572WN(4)	8
105	Silicon Diode(Varistor)	S3016R	4
106	Silicon Diode(Varistor)	KB-262	4
107	Silicon Diode	1S1885	1
108	Zener Diode	02Z12A	1
	RESISTORS		
004-401	Resistor-Semi Variable	R-HK 1KB 3S	4

PARTS LIST

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
004-402	Resistor-Wire Wound	RMS 1W 0.5SW	8
602	Fuse Holder	FF-1S-H	4
	NAPL-133a		
	SEMICONDUCTORS		
005-101	Transistor	2SC828(R)	4
	NAFS-156		
	SEMICONDUCTORS		
006-101	Transistor	2SC1000(GR)or(BL)	2

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
	PRINTED CIRCUIT BOARD		
002-701	Printed Circuit Boaral	NCIM-130	
003-701	Printed Circuit Boaral	NCAF-131a	
004-701	Printed Circuit Boaral	NCMA-134	
005-701	Printed Circuit Boaral	NCPL-133b	
006-701	Printed Circuit Boaral	NCFS-156	

SURROUND COMPOSER DIAGRAM(PATENTED)